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## Molecules found that control the development of blood vessel cells

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Researchers at the Gladstone Institute of Cardiovascular Disease have identified two molecules, called microRNAs, that push early heart cells to mature into the smooth muscle cells that line blood vessels. These same molecules also control when those smooth muscle cells divide to repair damage or in diseases such as cancer or atherosclerosis, which both involve unhealthy blood vessel growth. The two microRNAs, miR-145 and miR-143, are abundant in the primitive heart cells of prenatal mice, leading those cells to differentiate into various mature heart and aorta cells. After birth, both microRNAs are present mainly in smooth muscle cells, which also line the small intestine. If both microRNAs are absent, smooth muscle cells in blood vessels start multiplying. This helps heal injured blood vessels, but it can also create abnormal blood vessel growth in certain diseases. This cell proliferation can thicken blood vessels in atherosclerosis, or it can nourish tumors with blood. These findings could help scientists create smooth muscle cells from embryonic stem cells for therapeutic uses, or could lead to therapies for atherosclerosis or cancer.

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